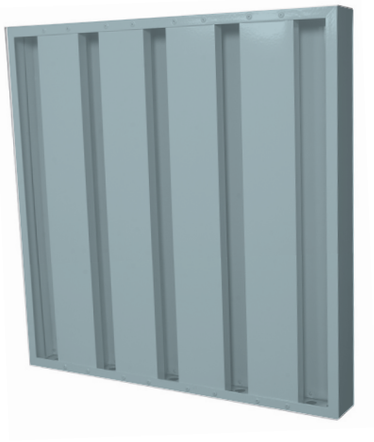
CHAPTER 8

SAND TRAP LOUVERS



CHAPTER-8

SAND TRAP LOUVERS

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SAND TRAP LOUVERS

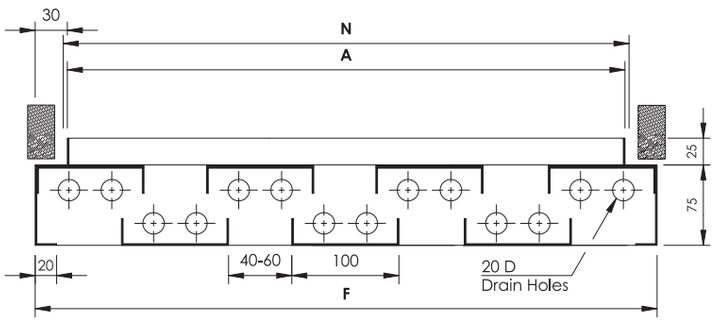
The Sand Trap Louvers **STL** of **BCI** are designed for usage in serving as a Pre – Filter element in dusty and sandy zone conditions as well as to protect the entry to the external inlets of air conditioning or filtration ducting systems and walls. Blades are formed in U – Profiles placed alternately in vertical configuration. This particular configuration allows a sand and heavy dust separation at high performance rates. The drain holes placed in the lower part let the Louver be self emptying, self cleaning and maintenance free.

Features & Characteristics :

- Construction : Frame & blades are made of high quality Extruded Aluminium Profiles of 6063 Alloy.
- Frame and Blades general wall thickness : 1.5 – 1.8 mm and 1.2 – 1.5 mm respectively.
- Frame Flange width : 20 mm.
- Blades width : 100 mm.
- The vertically U – Inverted blades are assembled in a double bank opposite style configuration which enables the unit to fulfill the requirements for not only a sand or dust filtration but also being a standard weather resisting assembly.
- Flush Mounted Sand Trap Louver type (Model FSTL) is also available. It's convenient to fix on the same plane of the wall with a sand chute tray fixed and inclined at the lower part of the Louver (suitable for all external wall installations).
- Since the STL is only a Pre-Filter unit, it's not recommended to be used alone in a system.
- The adjacent blades are positioned on 40 mm minimum spacing up to 60 mm maximum spacing providing maximum separation of sand or dust from inlet air at low air velocities, thus avoiding excessive dust loading of conventional filters.
- The lower part of the Louver frame contains of 20 mm drain holes arranged in two parallel row for empting the captured sand or dust.
- Available in wide variety of neck sizes with 150 x 150 mm minimum single section size and 2 mtr maximum single section height. Louvers height exceeding 2 mtr to be fabricated and supplied in multiple sections depending on length and height dimensions as well as site conditions.
- The assembly of multiple sections is unlimited where each section operates independently.
- Multiple sections : Supplied as separate sections and assembly by others on site.
- As a standard, the STL.'s are always provided with Bird Screen (Bird Guard) of galvanized steel with 12 x 12 mm grids attached behind the frame to prevent large flying objects and animals to pass through the system. Also available with Insect Screen as an option (on request).
- Sand Trap Louvers are available with different type of attachments such as :
  - Aluminium Filter (Model STL + F).
  - Opposed Blade Damper (Model STL + D).
  - Both the Filter and Damper (Model STL + F + D).
- Mounting instructions : see page No. SL-05.
- Surface Finishes : see page No. SL-09.

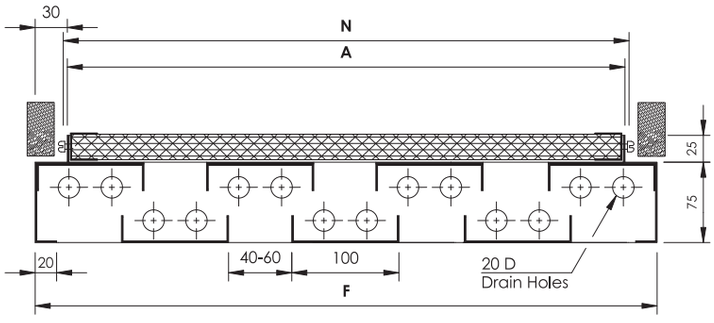
Sand Trap Louvers
Construction and Dimensional Details

Model STL



- Bird Screen (standard).

Model STL + F



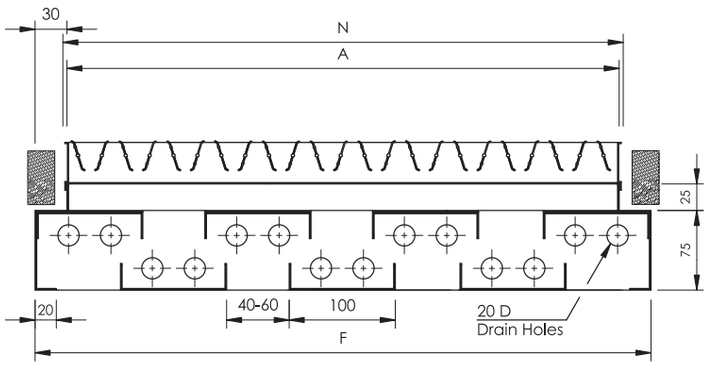
- Bird Screen (standard).
- Filter : Aluminium Washable Filter Media of 1/2" standard thickness (1 and 2" thicknesses also available on request as an option).

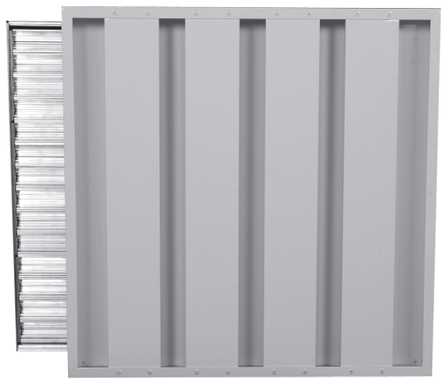
N : Nominal/Listed Size = Length (L) x Height (H)
A : Actual Size = (L-5) x (H-5)
F : Face Size = (L+55) x (H+55)

- Sand Trap Louvers furnished approximately 5 mm less than the Nominal/Listed Size.
- All Dimensions are in mm and subject to ±1 mm tolerance.

Sand Trap Louvers
Construction and Dimensional Details

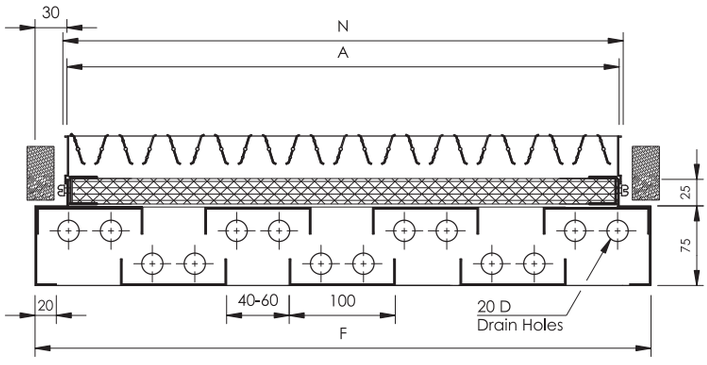
Model STL + D

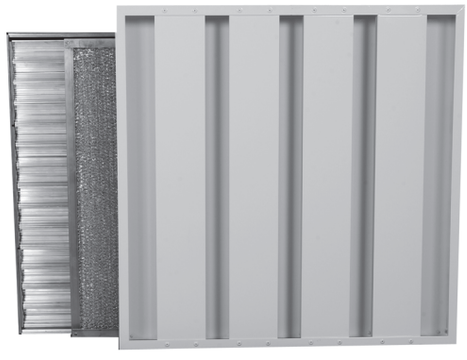




- Bird Screen (standard).
- For Opposed Blade Damper details and construction refer to chapter (1) or (2).
- For large sizes of STL it's not recommanded to use this type of local Opposed Blade Damper due to it's weakness, thus for more rigidity the Opposed Blade Damper has to be replaced by Volume Control Damper (VCD).

Model STL + F + D





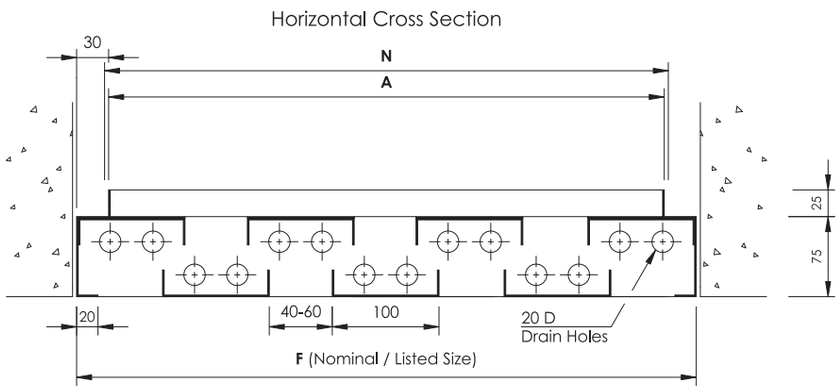
- Bird Screen (standard).
- Filter : Aluminium Washable Filter Media of 1/2 " standard thickness (1 and 2 " thicknesses also available on request as an option).
- For Opposed Blade Damper details and construction refer to chapter (1) or (2).

N : Nominal/Listed Size = Length (L) x Height (H)
A : Actual Size = (L-5) x (H-5)
F : Face Size = (L+55) x (H+55)

- Sand Trap Louvers furnished approximately 5 mm less than the Nominal/Listed Size.
- All Dimensions are in mm and subject to ±1 mm tolerance.

Flush Mounted Sand Trap Louvers
Construction and Dimensional Details

Model FSTL



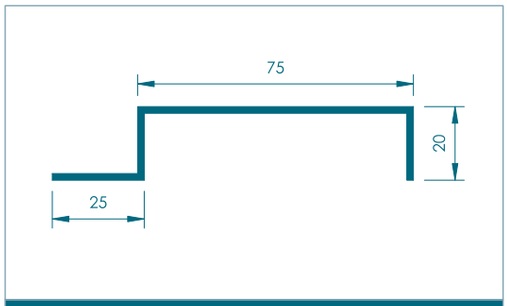
- Louver immerged inside the wall level.

- Bird Screen (standard).
- This model usually used when the Sand Trap Louver is required to be installed in plane with the external wall of the building from outside.
- It's provided with especially designed sand chute tray as shown in order to ensure the discharge of captured sand or dust to outside the building.
- Also it's available with different Type of attachments such as :
  - Aluminium Filter (Model FSTL + F).
  - Opposed Blade Damper (Model FSTL + D).
  - Both the Filter and Damper (Model FSTL + F + D).
- As a unique case, the sizing of this type of Louvers should be specified in outer frame dimensions i.e. the Face size will be treated as a Nominal / Listed Size to fit the external wall opening as shown.

F : Nominal/Listed Size (Face Size)	= Length (L) x Height (H)
A : Actual Size	= (L-5) x (H-5)
N : Neck Size	= (L-55) x (H-55)

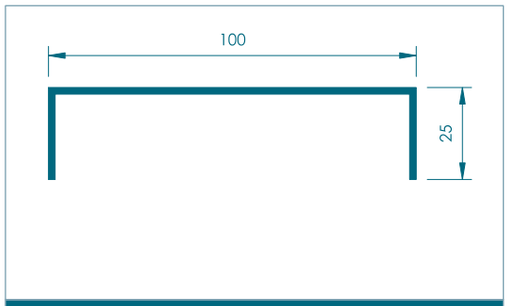
- Flush Mounted Sand Trap Louvers furnished approximately 5 mm less than the Nominal/Listed face size.
- All Dimensions are in mm and subject to ±1 mm tolerance.

Cross Sectional Drawings for Profiles used in Sand Trap Louvers



Frame Profile Section

Sand Trap Louvers

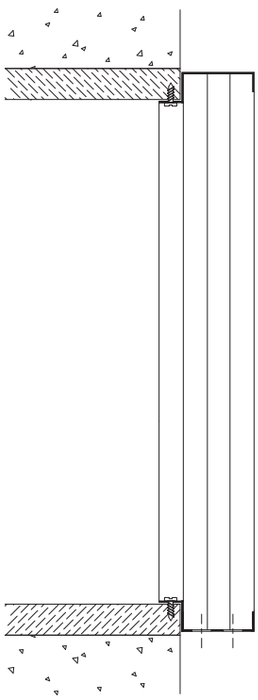


Blade Profile Section

Sand Trap Louvers

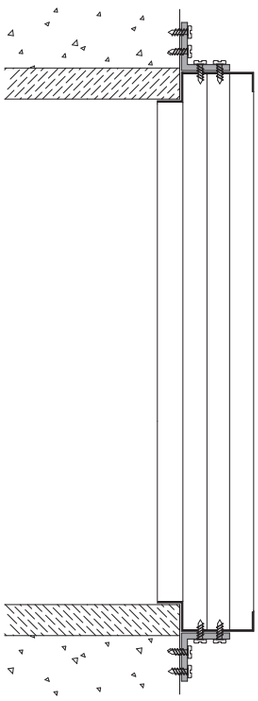
• All Dimensions are in mm and subject to ± 0.2 mm tolerance.

Available Fixing Mounting



A. Screw Fixing (Fixing to wall)

Sand Trap Louver is fixed to the wall through it's neck by means of screws as shown.

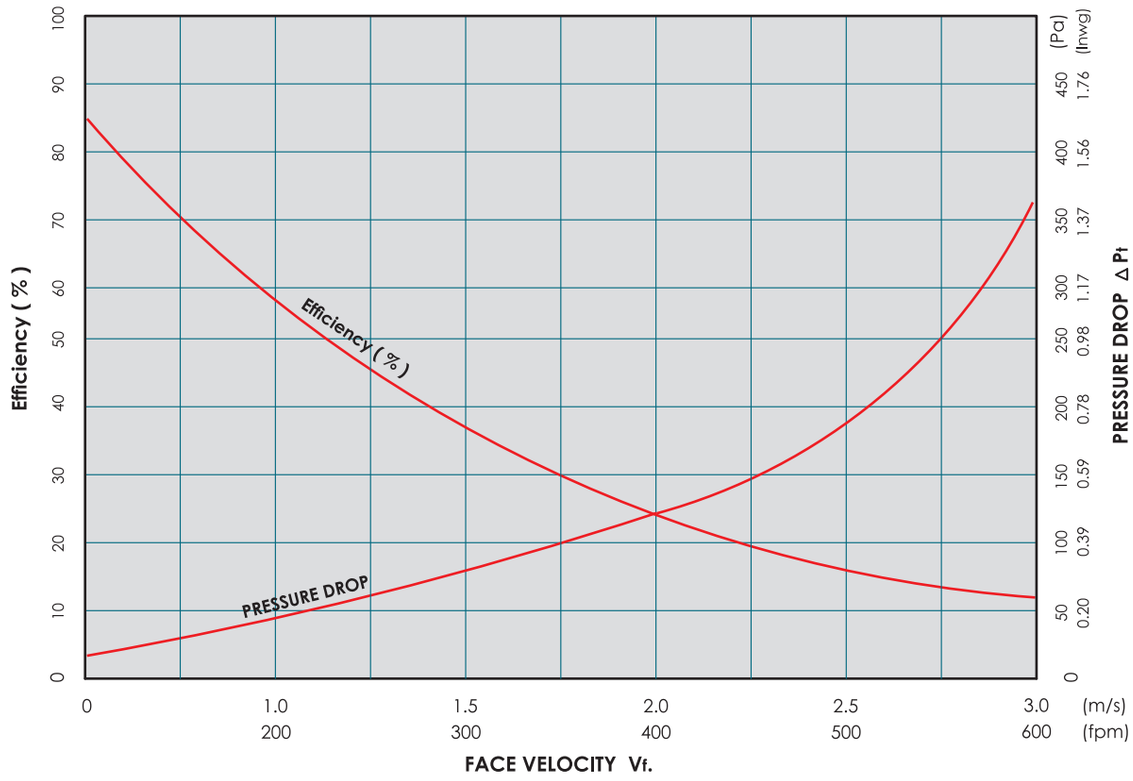


B. Angle Fixing (By Others)

For large sizes, it's recommended to use supporting Steel or Aluminium 90 ° angle as shown above to reinforce holding of the louver by outside wall.

Engineering and Performance Data

Air Flow Resistance Diagram (All Models)
Pressure Drop (△ Pf), Efficiency (%) versus Face Velocity (Vf.)



To Calculate The Air Flow Rate (All Models)

Simply the Air Flow Rate in (L/S) or (CFM) can be calculated using any of the following equations :

$$\text{Air Flow Rate in (L/S)} = 0.33 \times \frac{L\ (mm) \times H\ (mm) \times V_{f.}\ (m/s)}{1000}$$

or

$$\text{Air Flow Rate in (CFM)} = 0.33 \times \frac{L\ (inch) \times H\ (inch) \times V_{f.}\ (fpm).}{151}$$

L : Louver Length.
H : Louver Height.

Filtration Efficiency :

The filtration performance is dependant on the dust type and the velocity of the air, thus :

Particle Size Range	Filtration Efficiency in (%)	
	@ 1.0 m/s	@ 2.0 m/s
350 – 700	90	70
75 – 700	60	approx. 30

For normal operation conditions, Sand Trap Louvers used for natural ventilation purpose are rated at a recommended Face velocity not exceeding 1.0 – 1.5 m/s.

Note : For quick selection, some selected sizes of Louvers at specific Face Velocities (1.0 & 1.5 m/s) have been applied to the above equations and tabulated in the next two pages in the form of CFM values (table No. SL-01 & 02) in order to cover your needs of sizing selection.

Engineering and Performance Data

TABLE SL-01

Air Flow Rate Values In CFM For Selected Sizes of Sand Trap Louvers @ $V_{f.}$ = 1.0 (m/s)

L \ H	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
100	7														
150	10														
200	14	28													
250	17	35													
300	21	42	63												
350	24	49	73												
400	28	56	84	112											
450	31	63	94	126											
500	35	70	105	140	175										
550	38	77	115	154	192										
600	42	84	126	168	210	252									
650	45	91	136	182	227	273									
700	49	98	147	196	245	294	343								
750	52	105	157	210	262	315	367								
800	56	112	168	224	280	336	392	448							
850	59	119	178	238	297	357	416	476							
900	63	126	189	252	315	378	441	503	566						
950	66	133	199	266	332	399	465	531	598						
1000	70	140	210	280	350	420	489	559	629	699					
1050	73	147	220	294	367	441	514	587	661	734					
1100	77	154	231	308	385	462	538	615	692	769	846				
1150	80	161	241	322	402	482	563	643	724	804	885				
1200	84	168	252	336	420	503	587	671	755	839	923	1007			
1250	87	175	262	350	437	524	612	699	787	874	961	1049			
1300	91	182	273	364	455	545	636	727	818	909	1000	1091	1182		
1350	94	189	283	378	472	566	661	755	850	944	1038	1133	1227		
1400	98	196	294	392	489	587	685	783	881	979	1077	1175	1273	1371	
1450	101	203	304	406	507	608	710	811	913	1014	1115	1217	1318	1420	
1500	105	210	315	420	524	629	734	839	944	1049	1154	1259	1364	1468	1573
1550	108	217	325	434	542	650	759	867	975	1084	1192	1301	1409	1517	1626
1600	112	224	336	448	559	671	783	895	1007	1119	1231	1343	1454	1566	1678
1650	115	231	346	462	577	692	808	923	1038	1154	1269	1385	1500	1615	1731
1700	119	238	357	476	594	713	832	951	1070	1189	1308	1427	1545	1664	1783
1750	122	245	367	489	612	734	857	979	1101	1224	1346	1468	1591	1713	1836
1800	126	252	378	503	629	755	881	1007	1133	1259	1385	1510	1636	1762	1888
1850	129	259	388	517	647	776	906	1035	1164	1294	1423	1552	1682	1811	1940
1900	133	266	399	631	664	797	930	1063	1196	1329	1461	1594	1727	1860	1993
1950	136	273	409	545	682	818	955	1091	1227	1364	1500	1636	1773	1909	2045
2000	140	280	420	559	699	839	979	1119	1259	1399	1538	1678	1818	1958	2098

- L & H Dimensions are in mm.
- Damper at full open position (if any).

Engineering and Performance Data

TABLE SL-02

Air Flow Rate Values In CFM For Selected Sizes of Sand Trap Louvers @ V_f = 1.5 (m/s)

L \ H	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
100	10														
150	16														
200	21	42													
250	26	52													
300	31	63	94												
350	37	73	110												
400	42	84	126	168											
450	47	94	142	189											
500	52	105	157	210	262										
550	58	115	173	231	288										
600	63	126	189	252	315	378									
650	68	136	205	273	341	409									
700	73	147	220	294	367	441	514								
750	79	157	236	315	393	472	551								
800	84	168	252	336	420	503	587	671							
850	89	178	267	357	446	535	624	713							
900	94	189	283	378	472	566	661	755	850						
950	100	199	299	399	498	598	698	797	897						
1000	105	210	315	420	524	629	734	839	944	1049					
1050	110	220	330	441	551	661	771	881	991	1101					
1100	115	231	346	462	577	692	808	923	1038	1154	1269				
1150	121	241	362	482	603	724	844	965	1086	1206	1327				
1200	126	252	378	503	629	755	881	1007	1133	1259	1385	1510			
1250	131	262	393	524	656	787	918	1049	1180	1311	1442	1573			
1300	136	273	409	545	682	818	955	1091	1227	1364	1500	1636	1773		
1350	142	283	425	566	708	850	991	1133	1274	1416	1558	1699	1841		
1400	147	294	441	587	734	881	1028	1175	1322	1468	1615	1762	1909	2056	
1450	152	304	456	608	760	913	1065	1217	1369	1521	1673	1825	1977	2129	
1500	157	315	472	629	787	944	1101	1259	1416	1573	1731	1888	2045	2203	2360
1550	163	325	488	650	813	975	1138	1301	1463	1626	1788	1951	2114	2276	2439
1600	168	336	503	671	839	1007	1175	1343	1510	1678	1846	2014	2182	2350	2517
1650	173	346	519	692	865	1038	1211	1385	1558	1731	1904	2077	2250	2423	2596
1700	178	357	535	713	892	1070	1248	1427	1605	1783	1961	2140	2318	2496	2675
1750	184	367	551	734	918	1101	1285	1468	1652	1836	2019	2203	2386	2570	2753
1800	189	378	566	755	944	1133	1322	1510	1699	1888	2077	2266	2454	2643	2832
1850	194	388	582	776	970	1164	1358	1552	1746	1940	2135	2329	2523	2717	2911
1900	199	399	598	797	996	1196	1395	1594	1794	1993	2192	2392	2591	2790	2989
1950	205	409	614	818	1023	1227	1432	1636	1841	2045	2250	2454	2659	2864	3068
2000	210	420	629	839	1049	1259	1468	1678	1888	2098	2308	2517	2727	2937	3147

- L & H Dimensions are in mm.
- Damper at full open position (if any).

Ordering Data

- **Available Surface Finishes For Sand Trap Louvers :**
  - Natural / Matt Silver Anodized .
  - Powder Coating (Standard Colors are white RAL 9010/ 9016, other optional colors if required to be provided in RAL - No. only and charged extra).
  - Aluminium in Mill Finish.
  - Other Special Finishes (on request if available).

- **Available Surface Finishes For Opposed Blade Damper :**
  - Aluminium in Mill Finish (standard).
  - Matt Black Powder Coating (optional).

- **Ordering Specifications :**

Specify :

1 . Sand Trap Louver Description / Model (STL, STL + F, ...etc.).
2 . Nominal / Neck size.
3 . Quantity.
4 . Sand Trap Louvers Surface Finish.
5 . RAL – No.(only mention if powder coating surface finish is required).
6 . Thickness of Aluminium Filter for models attached with Filter (only mention if optional 1 or 2 " thickness is required).

Example 1 :

1	2	3	4	5	6
STL	16" x 12" 400 x 300 (mm)	10	Powder Coating	9016	–

Example 2 :

1	2	3	4	5	6
STL + F + D	24" x 16" 600 x 400 (mm)	3	Mill Finish	–	2" (optional)

Example 3 :

1	2	3	4	5	6
FSTL + F	40" x 40" 1000 x 1000 (mm)	5	Powder Coating	7035 (optional)	1" (optional)